Department of Health and Human Services
Public Health Service
Food and Drug Administration
Center for Drug Evaluation and Research
Office of Surveillance and Epidemiology

Drug Utilization Review

Date:	July 9, 2012
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Subject:	Vyvanse® (lisdexamfetamine dimesylate) Drug Utilization Review for September 2012 Pediatric Advisory Committee
Drug Name(s):	Vyvanse® (lisdexamfetamine dimesylate)
Application Type/Number:	NDA 021977
Applicant/sponsor:	Shire US Inc.
OSE RCM #:	2012-961

CONTENTS

EXECUTIVE SUMMARY

In preparation for an upcoming Pediatric Advisory Committee (PAC) meeting scheduled on September 2012, this review provides U.S. outpatient retail pharmacy drug utilization patterns in the pediatric population (0-17 years) and the adult population (18 years and older) for Vyvanse® (lisdexamfetamine dimesylate), from February 2007 through March 2012.

Summary of findings from February 2007 through March 2012, aggregate:

- Lisdexamfetamine was the third most frequently dispensed ADHD medication (USC class 64500 and 64700) to the pediatric population aged 0-17 years from year 2009 through 2011.
- A total of approximately 25.9 million lisdexamfetamine prescriptions were dispensed, and approximately 3.8 million patients received lisdexamfetamine prescriptions from U.S. outpatient retail pharmacies.
- Lisdexamfetamine prescriptions dispensed to the pediatric population aged 0-17 years accounted for approximately 16.5 million prescriptions (64% of total prescriptions) and 2.4 million patients (62.5% of total patients).
- The number of adult patients aged 18 years and older who received a dispensed prescription for lisdexamfetamine increased by nearly 3-fold and the number of pediatric patients aged 0-17 years who received a dispensed prescription for lisdexamfetamine increased by 67%, from year 2008 through 2011.
- The majority of pediatric patients who received a dispensed prescription for lisdexamfetamine were patients aged 6-17 years, accounting for 97% of pediatric patients (2.3 million patients).
- Approximately 4% of pediatric patients aged 0-5 years (100,500 patients) received a dispensed prescription for lisdexamfetamine off-label.
- Psychiatry was the top prescribing specialty accounting for approximately 36% of lisdexamfetamine prescriptions and Pediatricians accounted for 30% of lisdexamfetamine prescriptions.
- "Attention Deficit Disorder" (ICD-9 code 314.0) was the top diagnosis code associated with the use of lisdexamfetamine in the pediatric population aged 0-17 years.

1 INTRODUCTION

1.1 BACKGROUND

In preparation for the Pediatric Advisory Committee meeting scheduled on September 2012, the Office of Pediatric Therapeutics (OPT) and the Pediatric and Maternal Health Staff (PMHS) asked the Division of Epidemiology II (DEPI II) to provide drug utilization data for Vyvanse® (lisdexamfetamine dimesylate) to evaluate the extent of use in pediatric patients. Specifically, we were asked to focus on drug utilization patterns by the

number of prescriptions and patients by the following age groups: 0-5 years, 6-17 years, and 18 years and older. In addition, we examined the top prescribing specialties and diagnoses associated with the use of lisdexamfetamine. Using the currently available proprietary drug use databases, this review describes U.S. outpatient retail pharmacy drug utilization patterns in the adult and pediatric population for lisdexamfetamine from February 2007 through March 2012.

1.2 PRODUCT INFORMATION[1]

Vyvanse® (lisdexamfetamine dimesylate), a prodrug of the stimulant dextroamphetamine, is indicated for the treatment of Attention Deficit Hyperactivity Disorder (ADHD). After oral ingestion, lisdexamfetamine is converted to l-lysine and active dextroamphetamine, which is responsible for the therapeutic effect. Lisdexamfetamine is classified as a Schedule II Controlled Substance.

Table 1: Lisdexamfetamine Formulation and Indications

Trade Name	Generic Name	Application Number	Original Approval Date	Dosage Form	Indications	Manufacturer
Vyvanse®	Lisdexamfetamine dimesylate	NDA 21-977	02/23/2007	*Capsule:* 20 mg, 30 mg, 40 mg, 50 mg, 60 mg, 70 mg	Attention deficit hyperactivity disorder Safety and efficacy in pediatric patients below the age of 6 years have not been established.	Shire

2 METHODS AND MATERIALS

2.1 DETERMINING SETTING OF CARE

The IMS Health, IMS National Sales Perspectives™ database (see ***Appendix 2*** for full database description) was used to determine the various retail and non-retail channels of distribution for Vyvanse® (lisdexamfetamine dimesylate). Sales data for the 12-month period ending in March 2012 indicated that approximately 92% of lisdexamfetamine bottles were distributed to outpatient retail pharmacies; 4% to mail order/specialty pharmacies; and 4% to non-retail pharmacies.[2] Retail pharmacies include chain stores, independent pharmacies, and food store pharmacies. As a result, outpatient retail pharmacy utilization patterns were examined for this review. Neither mail order/specialty nor non-retail settings data were included in this analysis.

[1] Vyvanse® (lisdexamfetamine dimesylate) package insert. Shire US Inc; Wayne, PA. January 2012.

[2] IMS Health, IMS National Sales Perspectives™ Database. Extracted May 2012. File: NSP 2012-961 Vyvanse MAT 5-3-2012.xls.

2.2 DATA SOURCES USED

Proprietary drug use databases were used to conduct this analysis (see ***Appendix 2***).

U.S. outpatient utilization and patient demographics for lisdexamfetamine were obtained from the IMS, Vector One®: National (VONA) and Total Patient Tracker (TPT) from February 2007 through March 2012. From these two sources, nationally projected estimates of the number of prescriptions dispensed by outpatient retail pharmacies and the number of patients who received a dispensed prescription for lisdexamfetamine were stratified by the following patient age groups: 0-5 years, 6-17 years and 18 years and older. The top prescribing specialties associated with the use of lisdexamfetamine were also obtained from the IMS, Vector One®: National (VONA). Diagnoses associated with the use of lisdexamfetamine were obtained from Encuity Research, LLC.'s, Physician Drug and Diagnosis Audit (PDDA) with Pain Panel.

3 RESULTS

3.1 LISDEXAMFETAMINE PRESCRIPTIONS IN THE ADHD MARKET

Figure 1 in ***Appendix 1*** graphically displays the nationally estimated number of prescriptions for the top ADHD medications (USC class 64500 and USC class 64700) dispensed to the pediatric population (0-17 years) from U.S. outpatient retail pharmacies, from years 2008 through 2011. Throughout the examined time period, methylphenidate products were the most commonly dispensed ADHD medication among patients aged 0-17 years, followed by amphetamine/dextroamphetamine products. From year 2009 through year 2011, lisdexamfetamine was the third most frequently dispensed ADHD medication dispensed to the pediatric population.

3.2 LISDEXAMFETAMINE PRESCRIPTION DATA

Table 2 in ***Appendix 1*** provides the nationally estimated number of prescriptions dispensed for lisdexamfetamine from U.S. outpatient retail pharmacies, stratified by patient age, from February 2007 through March 2012. A total of approximately 25.9 million prescriptions were dispensed for lisdexamfetamine during the examined time period. Lisdexamfetamine prescriptions dispensed to the pediatric population aged 0-17 years accounted for the largest proportion of use at 64% of the total (16.5 million prescriptions). The adult population aged 18 years and older accounted for 36% of lisdexamfetamine prescriptions (9.4 million prescriptions). Among the prescriptions dispensed to pediatric patients, the majority were for patients aged 6-17 years with 98% of the pediatric prescriptions (16.2 million prescriptions), during the examined time period. Approximately 2% of pediatric prescriptions (312,000 prescriptions) were dispensed off-label to patients aged 0-5 years.

Lisdexamfetamine prescriptions dispensed to the adult population aged 18 years and older increased by nearly 4-fold from 895,000 prescriptions in year 2008 to approximately 3.3 million prescriptions in year 2011. Prescriptions dispensed to the pediatric population aged 0-17 years increased by 2-fold from 2.2 million prescriptions in year 2008 to 4.8 million prescriptions in year 2011. The off-label use in pediatric

patients aged 0-5 years increased by 67% from 49,000 prescriptions in year 2008 to 81,000 prescriptions in year 2011.

3.3 LISDEXAMFETAMINE PATIENT DATA

Table 3 in ***Appendix 1*** provides the nationally estimated number of patients who received a dispensed prescription for lisdexamfetamine from U.S. outpatient retail pharmacies, stratified by patient age, from February 2007 through March 2012. A total of approximately 3.8 million patients received a prescription for lisdexamfetamine during the aggregate time period. Similar to dispensed prescriptions, the highest proportion of patients who received a dispensed prescription for lisdexamfetamine was the pediatric population aged 0-17 years at 62.5% of the total (2.4 million patients). Among the pediatric patients who received a dispensed prescription for lisdexamfetamine, the majority were patients aged 6-17 years, accounting for 97% of pediatric patients (2.3 million patients). Approximately 4% of pediatric patients aged 0-5 years (100,500 patients) received a dispensed prescription for lisdexamfetamine off-label.

In general, trends for patient data were similar to those of dispensed prescription data. The number of adult patients aged 18 years and older who received a prescription for lisdexamfetamine increased from by nearly 3-fold from 283,000 patients in year 2008 to 748,000 patients in year 2011. ***Figure 2*** in ***Appendix 1*** graphically displays the nationally estimated number of pediatric patients (aged 0-17 years) who received a dispensed prescription for lisdexamfetamine from U.S. outpatient retail pharmacies, from year 2008 through 2011. The number of pediatric patients aged 0-17 years who received a prescription for lisdexamfetamine increased by 67% from 623,000 patients in year 2008 to 1 million patients in year 2011. Additionally, the off-label use in pediatric patients aged 0-5 years increased by 47% from 20,000 patients in year 2008 to 30,000 patients in year 2011.

3.4 LISDEXAMFETAMINE UTILIZATION BY PRESCRIBER SPECIALTY

Table 4 in ***Appendix 1*** provides the top ten prescribing specialties for lisdexamfetamine, by the nationally estimated number of prescriptions dispensed from U.S. outpatient retail pharmacies from February 2007 through March 2012, aggregate. During the examined time period, “Psychiatry” was the top prescribing specialty, accounting for approximately 36% (9.3 million prescriptions) of total dispensed prescriptions for lisdexamfetamine. “Pediatricians” and “General Practice/Family Medicine” followed with approximately 30% (7.8 million prescriptions) and 15% (4 million prescriptions) of total dispensed prescriptions, respectively.

3.5 DIAGNOSIS ASSOCIATED WITH THE USE OF LISDEXAMFETAMINE

Table 5 in ***Appendix 1*** provides the top diagnoses associated with the use of lisdexamfetamine, as reported by U.S. office-based physician surveys, stratified by patient age, from February 2007 through March 2012, aggregate. Physician diagnoses were coded according to the International Classification of Disease (ICD-9 codes) and 95% confidence intervals were applied to the estimates. “Attention Deficit Disorder”

(ICD-9 code 314.0) was the top diagnosis associated with the use of lisdexamfetamine in patients aged 0-5 years with approximately 94% or 175,000 drug use mentions[3] (95% CI, 112,000 – 237,000) and patients aged 6-17 years with approximately 96% or 7.6 million drug use mentions (95% CI, 7.2 million – 8 million). The diagnosis of "Other Emotional Child Disorder" (ICD-9 code 313.8) and "Infantile Autism" (ICD-9 code 299.0) were also associated with the use of lisdexamfetamine in the pediatric population. However, these diagnosis codes reported were below the acceptable count allowable to provide a reliable estimate of national use and the results must be interpreted with caution as the sample size was very small with correspondingly large confidence intervals.

The most common diagnosis code for adult patients aged 18 years and older was also "Attention Deficit Disorder" (ICD-9 code 314.0) with approximately 92% or 3.8 million drug use mentions (95% CI, 3.5 million – 4.1 million) for lisdexamfetamine during the examined time period.

4 DISCUSSION

Lisdexamfetamine is indicated for the treatment of ADHD in patients aged 6 years and older. The overall findings from this review illustrate that off-label use of lisdexamfetamine exists in pediatric patients less than 6 years of age. Lisdexamfetamine prescriptions dispensed to pediatric patients aged 0-5 years increased by 67% from 49,000 prescriptions in year 2008 to 81,000 prescriptions in year 2011.

Findings from this review should be interpreted in the context of the known limitations of the databases used. We estimated that lisdexamfetamine products were distributed primarily to the outpatient retail pharmacy setting based on the IMS Health, IMS National Sales Perspectives™. This review does not include community health centers, outpatient clinics, and various other clinical settings where children and adolescents receive health care. It is unknown what percentage of overall ADHD treatment in the pediatric population is provided in different settings; therefore, our results should be viewed with caution. Sales data do not provide a direct estimate of use but do provide a national estimate of units sold from the manufacturer into the various channels of distribution. The amount of product purchased by these channels of distribution may be a possible surrogate for use, if we assume the facilities purchase drugs in quantities reflective of actual patient use.

We focused our analysis on only the outpatient retail pharmacy; therefore, these estimates may not apply to other settings of care in which these products are used (e.g. mail-order). The estimates provided are national estimates from retail pharmacy dispensing, but no statistical tests were performed to determine statistically significant changes over time or between products. Therefore, all changes over time or between products should be

[3] Encuity Research, LLC. uses the term "drug uses" to refer to mentions of a drug in association with a diagnosis during an office-based patient visit. This term may be duplicated by the number of diagnosis for which the drug is mentioned. It is important to note that a "drug use" does not necessarily result in prescription being generated. Rather, the term indicates that a given drug was mentioned during an office visit.

considered approximate, and may be due to random error. The universe of retail pharmacies are used to make national projections for dispensed prescriptions and patients receiving dispensed prescriptions.

Unique patient counts may not be added across time periods due to the possibility of double counting those patients who are receiving treatment over multiple periods in the study. Furthermore, patient age subtotals may not sum exactly due to patients aging during the study period ("the cohort effect"), and may be counted more than once in the individual age categories. For this reason, summing across time periods or patient age bands is not advisable and will result in overestimates of patient counts.

Indications for use were obtained using Encuity Research, LLC.'s PDDA, a monthly survey of 3,200 office based physicians. Although PDDA data are helpful to understand how drug products are prescribed by physicians, the small sample size and the relatively low usage of these products limits the ability to identify trends in the data. In general, physician survey data are best used to identify the typical uses for the products in clinical practice, and outpatient prescription data are best used to evaluate utilization patterns over time. Encuity Research, LLC. recommends caution when interpreting nationally projected estimates of annual uses or mentions that fall below 100,000 as the sample size is very small with correspondingly large confidence intervals.

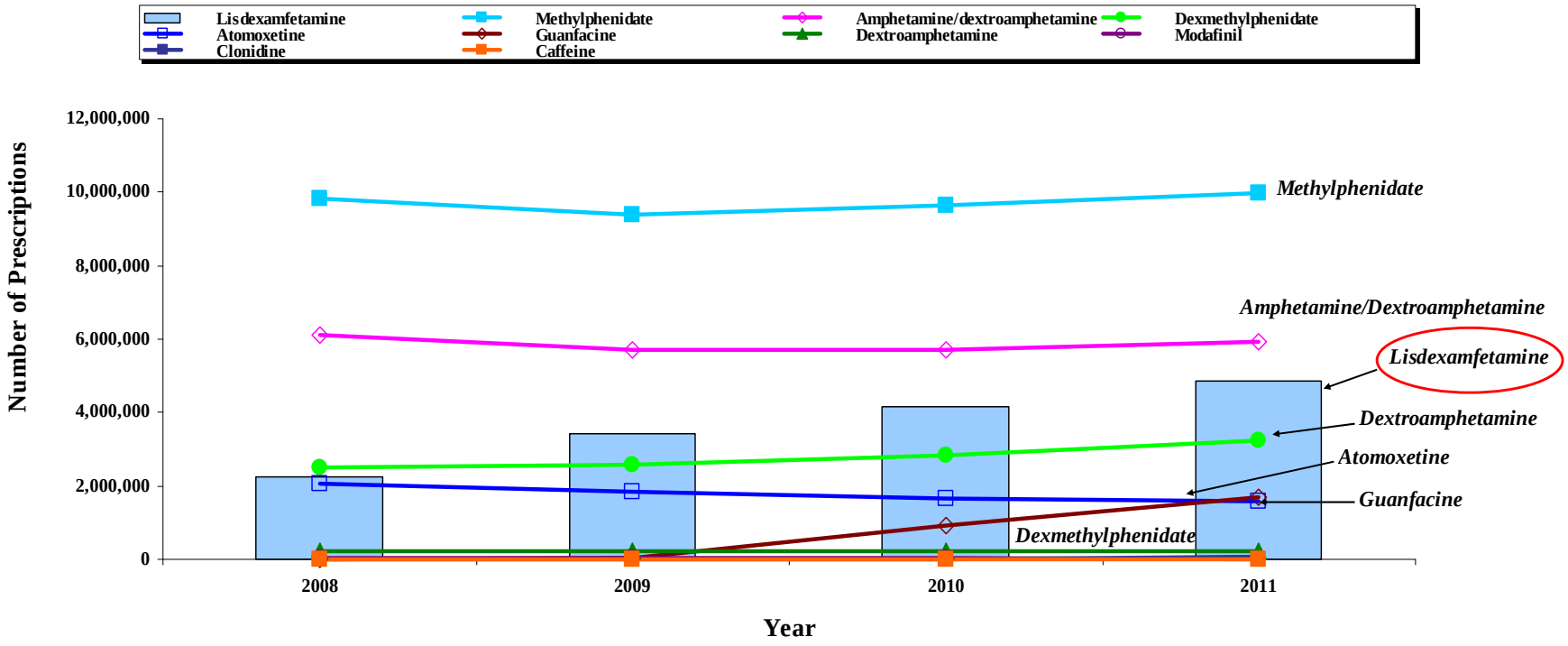
5 CONCLUSIONS

In the U.S. outpatient retail pharmacy setting, a total of approximately 25.9 million lisdexamfetamine prescriptions were dispensed to and approximately 3.8 million patients received lisdexamfetamine prescriptions from February 2007 through March 2012, cumulative. The pediatric population aged 0-17 years accounted for 64% of total prescriptions and 62.5% of total patients. Pediatric patients aged 6-17 years accounted for 97% of pediatric patients and patients aged 0-5 years accounted for 4% of pediatric patients. The off-label use of lisdexamfetamine in pediatric patients aged 0-5 years appears to be increasing during the examined time period. Psychiatry was the top prescribing specialty and "Attention Deficit Disorder" (ICD-9 code 314.0) was the top diagnosis associated with the use of lisdexamfetamine in pediatric patients.

APPENDICES

APPENDIX 1: TABLES AND FIGURES

Figure 1: Nationally Estimated Number of Prescriptions for the Top ADHD Molecules (USC Class 64500 and USC Class 64700) Dispensed to the Pediatric Population (0-17 years) from U.S. Outpatient Retail Pharmacies, Year 2008 through Year 2011



Source: IMS, Vector One®: National (VONA). Extracted May 2012. File: VONA 2012-961 Vyvanse & Comparators, 5-22-2012.xls

Table 2: Nationally Estimated Number of Prescriptions Dispensed for Lisdexamfetamine from U.S. Outpatient Retail Pharmacies, Stratified by Patient Age, from February 2007 through March 2012

	02/2007 - 12/2007		2008		2009		2010		2011		01/2012 - 03/2012		February 2007 to March 2012	
	TRxs N	Share %	TRxs N	Share %	TRxs N	Share %	TRxs N	Share %	TRxs N	Share %	TRxs N	Share %	TRxs N	Share %
LISDEXAMFETAMINE TOTAL PRESCRIPTIONS	**594,699**	**100.0%**	**3,124,707**	**100.0%**	**5,031,963**	**100.0%**	**6,565,020**	**100.0%**	**8,125,281**	**100.0%**	**2,445,982**	**100.0%**	**25,887,653**	**100.0%**
0-17 years	**419,037**	**70.5%**	**2,229,894**	**71.4%**	**3,420,168**	**68.0%**	**4,150,163**	**63.2%**	**4,841,045**	**59.6%**	**1,442,047**	**59.0%**	**16,502,354**	**63.7%**
0-5 years	10,756	2.6%	48,494	2.2%	69,626	2.0%	77,797	1.9%	80,870	1.7%	24,160	1.7%	311,703	1.9%
6-17 years	408,281	97.4%	2,181,399	97.8%	3,350,542	98.0%	4,072,367	98.1%	4,760,175	98.3%	1,417,887	98.3%	16,190,651	98.1%
18 years and older	**175,662**	**29.5%**	**894,810**	**28.6%**	**1,611,787**	**32.0%**	**2,406,246**	**36.7%**	**3,283,204**	**40.4%**	**1,003,923**	**41.0%**	**9,375,631**	**36.2%**
Unspecified Age	**--**	**--**	**4**	**0.0%**	**8**	**0.0%**	**8,611**	**0.1%**	**1,033**	**0.0%**	**13**	**0.0%**	**9,668**	**0.0%**

Source: IMS, Vector One®: National (VONA). Extracted May 2012. Files: VONA 2012-961 Vyvanse by age, 5-3-2012.xls and VONA 2012-961 Vyvanse 0-17yrs, 5-3-2012.xls

Table 3: Nationally Estimated Number of Patients Who Received a Dispensed Prescription for Lisdexamfetamine from U.S. Outpatient Retail Pharmacies, Stratified by Patient Age, from February 2007 through March 2012

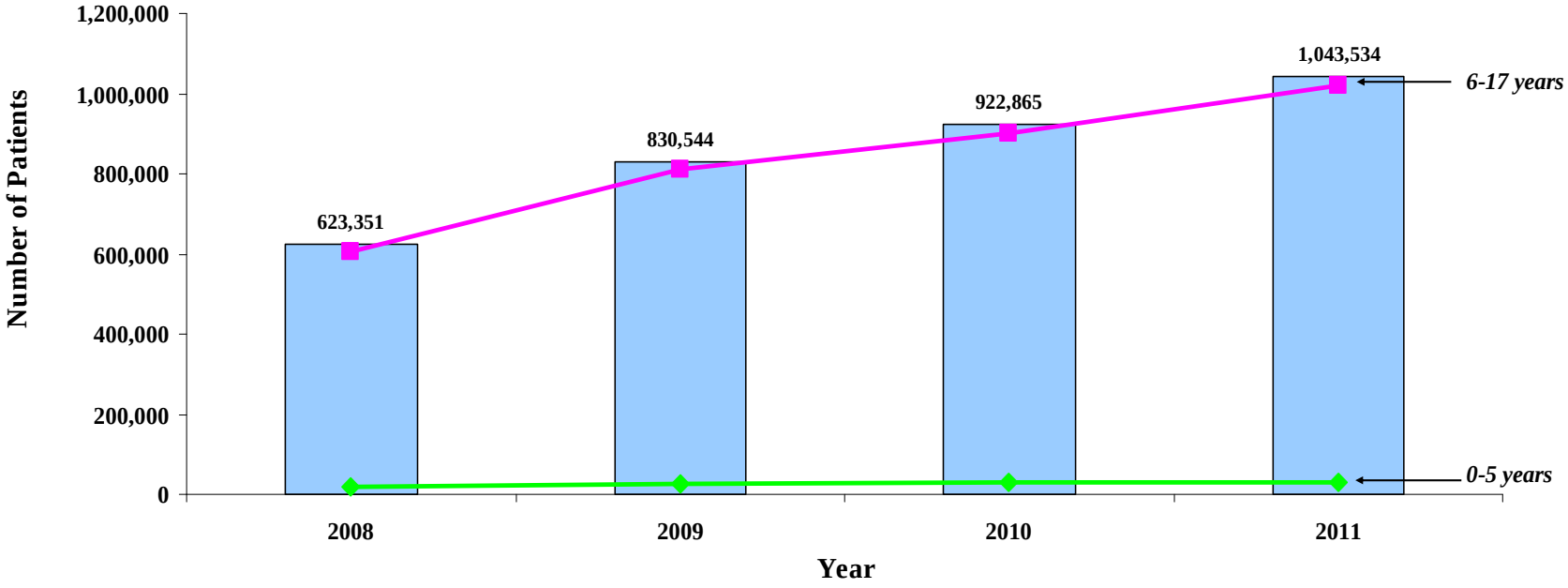
	02/2007 - 12/2007		2008		2009		2010		2011		01/2012 - 03/2012		February 2007 to March 2012	
	Patients N	Share %	Patients N	Share %	Patients N	Share %	Patients N	Share %	Patients N	Share %	Patients N	Share %	Patients N	Share %
LISDEXAMFETAMINE TOTAL PATIENTS	**296,838**	**100.0%**	**900,326**	**100.0%**	**1,255,626**	**100.0%**	**1,471,910**	**100.0%**	**1,765,581**	**100.0%**	**1,198,375**	**100.0%**	**3,824,461**	**100.0%**
0-17 years	**205,936**	**69.4%**	**623,351**	**69.2%**	**830,544**	**66.1%**	**922,865**	**62.7%**	**1,043,534**	**59.1%**	**707,622**	**59.0%**	**2,388,880**	**62.5%**
0-5 years	6,173	3.0%	20,401	3.3%	26,258	3.2%	28,408	3.1%	29,953	2.9%	13,638	1.9%	100,512	4.2%
6-17 years	200,208	97.2%	607,119	97.4%	810,802	97.6%	902,315	97.8%	1,022,021	97.9%	695,198	98.2%	2,327,505	97.4%
18 years and older	**91,439**	**30.8%**	**283,217**	**31.5%**	**439,821**	**35.0%**	**567,757**	**38.6%**	**748,056**	**42.4%**	**494,422**	**41.3%**	**1,541,960**	**40.3%**
Unspecified Age	**--**	**--**	**4**	**0.0%**	**6**	**0.0%**	**2,800**	**0.2%**	**918**	**0.1%**	**5**	**0.0%**	**3,021**	**0.1%**

*Unique patient counts may not be added across time periods due to the possibility of double counting those patients who are receiving treatment over multiple periods in the study.

** Patient age subtotals may not sum exactly due to patients aging during the study ("the cohort effect"), and may be counted more than once in the individual age categories. For this reason, summing across time periods or patient age bands is not advisable and will result in overestimates of patient counts.

Source: IMS, Vector One®: Total Patient Tracker (TPT). Extracted May 2012. Files: TPT 2012-691 Vyvanse by age Y2007, 5-4-2012.xls; TPT 2012-961 Vyvanse by age Y2008-2011; 5-4-2012.xls, TPT 2012-961 Vyvanse by age Y2012, 5-4-2012.xls; TPT 2012-961 Vyvanse by age, aggregate, 5-4-2012.xls; TPT 2012-691 Vyvanse by 0-17yrs Y2007, 5-4-2012.xls; TPT 2012-961 Vyvanse by 0-17yrs Y2008-2011; 5-4-2012.xls, TPT 2012-961 Vyvanse by 0-17yrs Y2012, 5-4-2012.xls; TPT 2012-961 Vyvanse by 0-17yrs, aggregate, 5-4-2012.xls

Figure 2: Nationally Estimated Number of Pediatric Patients (0-17 years) Who Received a Dispensed Prescription for Lisdexamfetamine from U.S. Outpatient Retail Pharmacies, Year 2008 through 2009



Source: IMS, Vector One®: Total Patient Tracker (TPT). Extracted May 2012. Files: TPT 2012-961 Vyvanse by age Y2008-2011, 5-4-2012.xls and TPT 2012-961 Vyvanse 0-17yrs Y2008-2011, 5-4-2012.xls

Table 4: Top 10 Prescribing Specialties for Lisdexamfetamine by the Nationally Estimated Number of Prescriptions Dispensed from U.S. Outpatient Retail Pharmacies, from February 2007 through March 2012, Aggregate

	February 2007 to March 2012	
	TRxs	Share
	N	%
LISDEXAMFETAMINE TOTAL PRESCRIPTIONS	**25,892,753**	**100.0%**
Psychiatry	9,263,902	35.8%
Pediatrics	**7,781,542**	**30.1%**
General Practice/Family Medicine	3,930,758	15.2%
Nurse Practitioner	1,509,304	5.8%
Unspecified	1,087,834	4.2%
Internal Medicine	700,229	2.7%
Neurology	646,800	2.5%
Physician Assistant	324,426	1.3%
Other	209,356	0.8%
Emergency Medicine	76,983	0.3%
All Others	361,618	1.4%

Source: IMS, Vector One®: National (VONA). Extracted May 2012. File: VONA 2012-961 Vyvanse by specialty, 5-3-2012.xls

Table 5: Top Diagnoses Associated with the Use of Lisdexamfetamine as Reported by U.S. Office-Based Physician Surveys, Stratified by Patient Age, from February 2007 through March 2012, Aggregate

	February 2007 to March 2012		
	Uses N	95% Confidence Interval	Share %
LISDEXAMFETAMINE TOTAL USES	**12,720,000**	**12,187,000 - 13,253,000**	**100.0%**
0-5 years	**187,000**	**122,000 - 251,000**	**1.5%**
3140 ATTENTION DEFICIT DIS	175,000	112,000 - 237,000	93.6%
3138 OTH EMOTIONAL DIS CHILD	6,000	<500 - 18,000	3.4%
3013 EXPLOSIVE PERSONALITY	6,000	<500 - 17,000	3.0%
6-17 years	**7,896,000**	**7,476,000 - 8,316,000**	**62.1%**
3140 ATTENTION DEFICIT DIS	7,568,000	7,157,000 - 7, 979,000	95.9%
3138 OTH EMOTIONAL DIS CHILD	76,000	35,000 - 117,000	1.0%
2990 INFANTILE AUTISM	29,000	3,000 - 54,000	0.4%
3152 OTH LEARNING DIFFICULTY	25,000	1,000 - 49,000	0.3%
V403 BEHAVIORAL PROBLEMS NEC	22,000	<500 - 44,000	0.3%
2998 EARLY CHLD PSYCHOSES NEC	19,000	<500 - 40,000	0.3%
3110 DEPRESSIVE DISORDER NEC	17,000	<500 - 36,000	0.2%
3128 OTHER CONDUCT DISTURB	14,000	<500 - 31,000	0.2%
3123 IMPULSE CONTROL DIS NEC	13,000	<500 - 31,000	0.2%
2999 EARLY CHLD PSYCHOSIS NOS	13,000	<500 - 30,000	0.2%
All Others	100,000	53,000 - 148,000	1.3%
18 years and older	**4,069,000**	**3,767,000 - 4,370,000**	**32.0%**
3140 ATTENTION DEFICIT DIS	3,760,000	3,470,000 - 4,050,000	92.4%
3129 CONDUCT DISTURBANCE NOS	57,000	21,000 - 93,000	1.4%
2967 BIPOLAR AFFECTIVE NOS	37,000	8,000 - 66,000	0.9%
3110 DEPRESSIVE DISORDER NEC	33,000	6,000 - 60,000	0.8%
3050 ALCOHOL ABUSE	28,000	3,000 - 53,000	0.7%
3123 IMPULSE CONTROL DIS NEC	16,000	<500 - 35,000	0.4%
2962 DEPR PSYCH, SINGL EPISOD	16,000	<500 - 35,000	0.4%
3003 OBSESSIVE-COMPULSIVE DIS	13,000	<500 - 29,000	0.3%
3004 NEUROTIC DEPRESSION	11,000	<500 - 26,000	0.3%
2963 DEPR PSYCH, RECUR EPISOD	10,000	<500 - 25,000	0.2%
All Others	89,000	44,000 - 133,000	2.2%
Unspecified Age	**568,000**	**456,000 - 681,000**	**4.5%**

* NEC: not elsewhere classified

** NOS: not otherwise specified

***Encuity Research, LLC. recommends caution interpreting projected annual uses or mentions below 100,000, as the sample size is very small with correspondingly large confidence intervals.

Source: Encuity Research, LLC. , Physician, Drug and Diagnosis Audit (PDDA) with Pain Panel. Extracted May 2012.
File: PDDA 2012-961 Vyvanse Dx by age, 5-4-2012.xls

APPENDIX 2: DRUG USE DATABASE DESCRIPTIONS

IMS Health, IMS National Sales Perspectives™: Retail and Non-Retail

The IMS Health, IMS National Sales Perspectives™ measures the volume of drug products, both prescription and over-the-counter, and selected diagnostic products moving from manufacturers into various outlets within the retail and non-retail markets. Volume is expressed in terms of sales dollars, eaches, extended units, and share of market. These data are based on national projections. Outlets within the retail market include the following pharmacy settings: chain drug stores, independent drug stores, mass merchandisers, food stores, and mail service. Outlets within the non-retail market include clinics, non-federal hospitals, federal facilities, HMOs, long-term care facilities, home health care, and other miscellaneous settings.

IMS, Vector One®: National (VONA)

The IMS, Vector One®: National (VONA) database measures retail dispensing of prescriptions or the frequency with which drugs move out of retail pharmacies into the hands of consumers via formal prescriptions. Information on the physician specialty, the patient's age and gender, and estimates for the numbers of patients that are continuing or new to therapy are available.

The Vector One® database integrates prescription activity from a sample received from payers, switches, and other software systems that may arbitrage prescriptions at various points in the sales cycle. Vector One® receives over 1.9 billion prescription claims per year, representing over 158 million unique patients. Since 2002 Vector One® has captured information on over 15 billion prescriptions representing over 356 million unique patients.

Prescriptions are captured from a sample from the universe of approximately 59,000 pharmacies throughout the U.S. There are over 800,000 physicians in the VECTOR One database, which supplies VONA, TPT, & DET. The pharmacies in the database account for most retail pharmacies and represent nearly half of retail prescriptions dispensed nationwide. IMS receives all prescriptions from approximately one-third of stores and a significant sample of prescriptions from many of the remaining stores.

IMS, Vector One®: Total Patient Tracker (TPT)

The IMS, Vector One®: Total Patient Tracker is a national-level projected audit designed to estimate the total number of unique patients across all drugs and therapeutic classes in the retail outpatient setting over time.

TPT derives its data from the Vector One® database which integrates prescription activity from a sample received from payers, switches, and other software systems that may arbitrage prescriptions at various points in the sales cycle. Vector One® receives over 1.9 billion prescription claims per year, representing over 158 million unique patients. Since 2002 Vector One® has captured information on over 15 billion prescriptions representing over 356 million unique patients.

Encuity Research, LLC., Physician Drug & Diagnosis Audit (PDDA)

Encuity Research, LLC., Physician Drug & Diagnosis Audit (PDDA) with Pain Panel is a monthly survey designed to provide descriptive information on the patterns and treatment of diseases encountered in office-based physician practices in the U.S. The survey consists of data collected from over 3,200 office-based physicians representing 30 specialties across the United States that report on all patient activity during one typical workday per month. These data may include profiles and trends of diagnoses, patients, drug products mentioned during the office visit and treatment patterns. The Pain Panel supplement surveys over 115 pain specialists physicians each month. With the inclusion of visits to pain specialists, this will allow additional insight into the pain market. The data are then projected nationally by physician specialty and region to reflect national prescribing patterns.

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/s/

KUSUM S MISTRY
07/09/2012
Drug use data has been cleared by the data vendors.

GRACE CHAI
07/09/2012
cleared by data vendors

LAURA A GOVERNALE
07/09/2012